APPENDIX B

SITE-SPECIFIC DATA QUALITY OBJECTIVE

DATA QUALITY OBJECTIVE NO. 1
WILCOX OIL
MEDIA OF CONCERN: SOIL

STEP 1. STATE THE PROBLEM	
To investigate the nature and extent of site-related contaminants in the soil associated with the Wilcox Oil Site.	

STEP 2. IDENTIFY THE DECISION	
Soil samples will be collected from various locations within the property to determine whether contaminants of concern (CoCs) are significantly elevated in the soil.	
IDENTIFY THE ALTERNATIVE ACTIONS THAT MAY BE TAKEN BASED ON THE DECISIONS.	• If concentrations of CoCs in soil exceed the EPA Region 6 RSLs, then that sample will be considered contaminated and require additional attention. • If concentrations of CoCs in the soil samples do not exceed the EPA Region 6 RSLs, then the media represented by that sample will not require additional attention.

STEP 3. IDENTIFY INPUTS TO THE DECISION	
IDENTIFY THE INFORMATIONAL INPUTS NEEDED TO RESOLVE A DECISION.	Contaminant concentrations in the soil samples collected from the property.
IDENTIFY THE SOURCES FOR EACH INFORMATIONAL INPUT AND LIST THE INPUTS THAT ARE OBTAINED THROUGH ENVIRONMENTAL MEASUREMENTS.	Analytical results from parameters listed in Section 4 of the QASP Addendum No. 1.
BASIS FOR THE CONTAMINANT SPECIFIC ACTION LEVELS.	Region 6 RSLs.
IDENTIFY POTENTIAL SAMPLING TECHNIQUES AND APPROPRIATE ANALYTICAL METHODS.	• Five-point composite samples (surface, 0-6, 6-12 and 12-24 inches bgs) from each designated grid. • See analyses listed in Section 4 of the QASP Addendum No. 1.

STEP 4. DEFINE THE BOUNDARIES OF THE STUDY	
DEFINE THE DOMAIN OR GEOGRAPHIC AREA WITHIN WHICH ALL DECISIONS MUST APPLY.	The area of concern on the property.
SPECIFY THE CHARACTERISTICS THAT DEFINE THE POPULATION OF INTEREST.	Contaminant concentration in soil within the property.
DEFINE THE SCALE OF DECISION MAKING.	Results of soil sampling will be used to evaluate the CoCs within the property.
DETERMINE THE TIME FRAME TO WHICH THE DATA APPLY.	The data will apply until the site media, represented by the soil samples, receives appropriate response actions.
DETERMINE WHEN TO COLLECT DATA.	Samples will be collected during the EPA Team field effort.
IDENTIFY PRACTICAL CONSTRAINTS ON DATA COLLECTION.	• Inclement weather. • Access not attainable.

STEP 5. DEVELOP A DECISION RULE	
SPECIFY THE PARAMETER THAT CHARACTERIZES THE POPULATION OF INTEREST.	Detection of CoCs in the soil samples by analytical testing to confirm concentrations in the pathway that exceed the EPA Region 6 RSLs.

SPECIFY THE ACTION LEVEL FOR THE DECISION.	EPA Region 6 RSLs.

STEP 6. SPECIFY LIMITS ON DECISION ERRORS	
DEVELOP A DECISION RULE.	If any result in the soil sample is above the EPA Region 6 RSLs, then the soil sample represented by that sample will require additional attention; otherwise, the soil does not require additional attention.
DETERMINE THE POSSIBLE RANGE OF THE PARAMETER OF INTEREST.	Contaminant concentrations may range from 0 milligrams per kilogram (mg/kg) to more than the contaminant -specific action level.
DEFINE BOTH TYPES OF DECISION ERRORS AND IDENTIFY THE POTENTIAL CONSEQUENCES OF EACH.	Type I Error: Deciding that the specified area represented by the soil sample does not exceed the specified assessment level when, in truth, the concentration of the contaminant exceeds its specified assessment level. The consequence of this decision error is that remedial efforts in the area may not be undertaken, possibly endangering human health and the environment. This decision error is more severe. Type II Error: Deciding that the specified area represented by the soil sample does exceed the specified assessment level when, in truth, it does not. The consequences of this decision error are that remediation of the area will continue and unnecessary costs will be incurred.
ESTABLISH THE TRUE STATE OF NATURE FOR EACH DECISION RULE.	The true state of nature when the soil is decided to be below the specified assessment levels when in fact, it is not below the specified assessment levels, is that the area does need remedial action. The true state of nature when the soil is decided to be above the specified assessment levels when in fact, it is not above the specified assessment levels, is that the area does not need remedial action.

STEP 6. SPECIFY LIMITS ON DECISION ERRORS (Continued)	
DEFINE THE TRUE STATE OF NATURE FOR THE MORE SEVERE DECISION ERROR AS THE BASELINE CONDITION OR THE NULL HYPOTHESIS (H_o) AND DEFINE THE TRUE STATE FOR THE LESS SEVERE DECISION ERROR AS THE ALTERNATIVE HYPOTHESIS (H_a).	Ho: The soil represented by the sample is above the specified action level. Ha: The soil represented by the sample is below the specified action level.
ASSIGN THE TERMS "FALSE POSITIVE" AND "FALSE NEGATIVE" TO THE PROPER DECISION ERRORS.	• False Positive Error = Type I • False Negative Error = Type II
ASSIGN PROBABILITY VALUES TO POINTS ABOVE AND BELOW THE ACTION LEVEL THAT REFLECT THE ACCEPTABLE PROBABILITY FOR THE OCCURRENCES OF DECISION ERRORS.	To be assigned based on discussions with EPA OSC.
STEP 7. OPTIMIZE THE DESIGN	
REVIEW THE DQOs.	Due to insufficient historical data, determination of the standard deviation was not possible. Therefore, sample size calculation using the traditional statistical formula may not be the optimal design. In order to select the optimal sampling program that satisfies the DQO and is the most resource effective, other elements were considered.
DEVELOP GENERAL SAMPLING AND ANALYSIS DESIGN. The EPA Team will collect soil samples from the property in Bristow, Creek County, Oklahoma. The samples will be shipped for laboratory analysis and methodology consistent with EPA Region 6 protocols. The samples will be analyzed by the methods listed in Section 4 of the QASP Addendum No. 1.	